Society for Cryobiology Newsletter December 2012

International Scientific Society for Low-Temperature Biology and Medicine

Message from the President

CRYO 2012—Rosario, Argentina
I am happy to report that the Rosario meeting ended up with a small cash surplus. Congratulations to the organizers for a well-run meeting, with the added benefit of actually making a little money.

Upcoming Meetings
The next meeting of the SFC is a joint one, with the American College of Cryosurgery, aboard a cruise ship out of Miami in early January. At last count the SFC has about 23 members speaking, which is about 1/3 of the speakers. Thus, we are making a very healthy contribution to the joint meeting, and I will report back how it went in the next newsletter. When I first got involved in the SFC, about 40 years ago, our meetings had a substantial contribution from surgeons, and I would welcome their participation again, either through joint meetings such as this one or at our annual meeting.

Planning for the 50th anniversary meeting in Washington, DC is proceeding, under the leadership of Eric James. I hope to have the highlights of what is being planned to send you in the next newsletter. We are also completing the agreement with the Society for In Vitro Biology, to be held in Savannah, Georgia in 2014. Jason Acker has been heading up that effort, for which we owe him thanks.

Society Logo
The formal logo for the SFC has been in place for nearly 40 years and has served us well. Julia Rodriguez, the daughter of one of the organizers for the Rosario meeting, is a professional graphics designer, and she did a whimsical drawing that served as the logo for that meeting. Many of us were so taken with it that we asked to use it as an additional, informal logo for the SFC. Julia has agreed, and it is that logo that you will see at the top of this newsletter. We intend to keep using the old logo on the letterhead and other formal applications. Comments are welcome.

Congratulations!
Finally, one last piece of good news: President-elect Erik Woods and his wife, Heather, have just had a new baby, their second, a boy, Cole Erik Woods. Congratulations to the growing Woods family.

John H. Crowe
President

News Updates

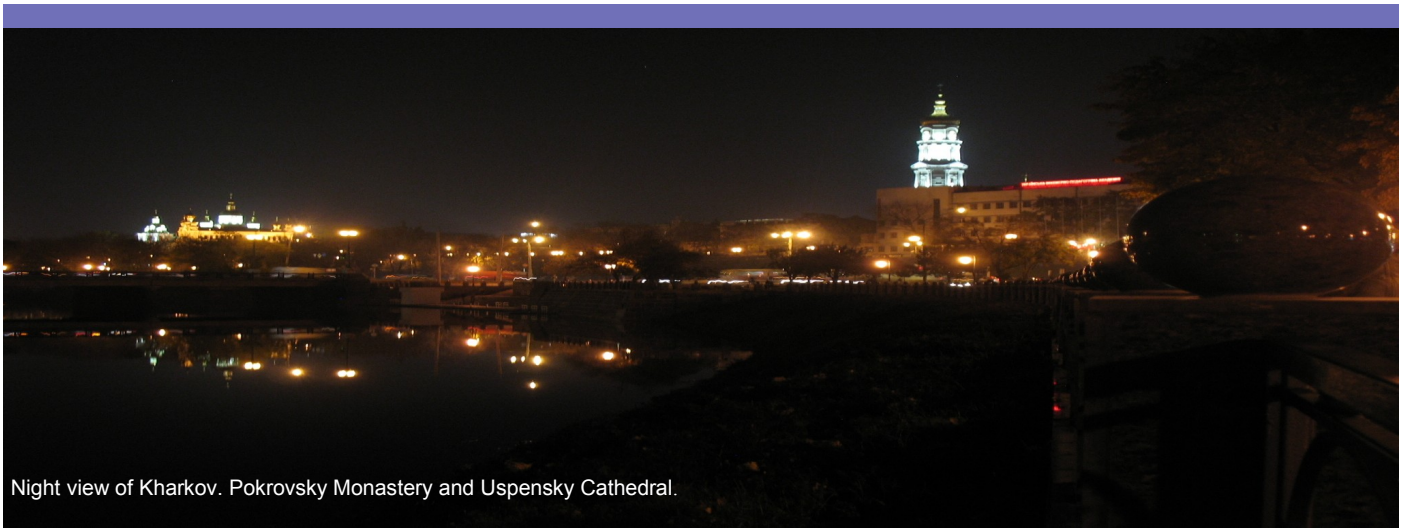
Membership Renewal

Please be aware that it is renewal time for membership to the Society for Cryobiology.

Click here to renew online via a secure server.

Or, contact Portland Customer Services at sales@portland-services.com

Membership Renewals after 15 January 2013 will incur a late fee of USD 20.00



Night view of Kharkov. Pokrovsky Monastery and Uspensky Cathedral.

40th Anniversary of the Institute for Problems of Cryobiology and Cryomedicine Conference - Current Problems in Cryobiology and Cryomedicine

On October 18-19th 2012, the National Medical University in Kharkov, Ukraine was the venue for the conference 'Current Problems in Cryobiology and Cryomedicine' devoted to the 40th Anniversary of the Institute for Problems of Cryobiology and Cryomedicine.

The centre was created in 1972 in the city which was a very important scientific center in the USSR - Kharkov was the hometown for the Institute of Low Temperature Physics, the Ukrainian Physical and Technical Institute and had an associated powerful biological and medical community

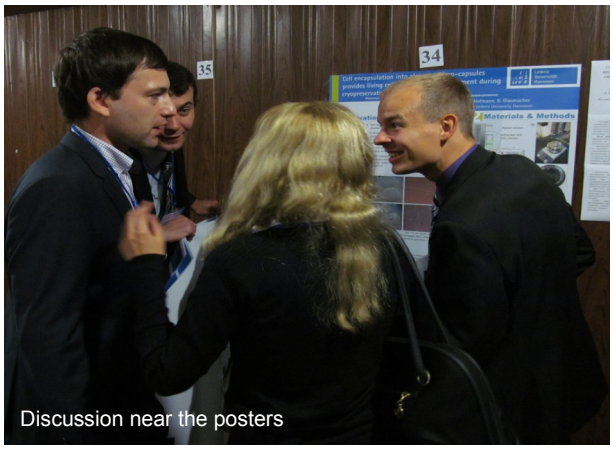
During all these years the staff of the Institute was comprised of a unique mix of physicists and biologists, chemists, medical scientists and engineers, which became the base of much successful research. Information on the present-day Institute can be found at www.cryo.org.ua.

Apart from the celebrations, which were marked by speeches from leading authorities from the National Academy of Sciences of Ukraine, the scientific program of the Meeting was abundant and diverse.

Professor Baust attracted interest from the audience

More than 200 participants of the conference attended the plenary lectures of the distinguished professors, and struggled to visit all of the parallel sections which included classic cryobiological issues such as fundamentals of cryobiology, hypothermic storage, low temperature banking, cold acclimation and physiology. Other more contemporary topics included cord blood and stem cells.

The poster session was also rich in attractive presentations, and many young scientists presented their results and gained experience in discussions. Three of them were designated as the winners of best poster presentation: O. Gryshkov from Hannover, K. Pyrshev from Kiev, and E. Lutsenko from Kharkov.



Discussion near the posters

Long-time and new friends were able to meet in a convivial scientific environment, to proceed with their communications and to have some fun during the evening celebration party in the restaurant. The closing ceremony comprised of a brief summary of the achievements and future prospects and plans of the Institution.

Dr Vitaliy Kholodny

Electronic Voting - An Apology

It has been brought to our attention that some of the membership did not receive electronic notification of the ballots for the Board of Governors. We would like to apologizing profusely on behalf of Portland Customer Services and would ask that anyone who did not receive notification to contact Erik Woods directly at Erik.Woods@CookGBT.com or at (+1) 317-917-3450?

Cryobiology Journal – some Facts and Figures

The impact factor for the 2011 issue of Cryobiology, as given by Thomson Reuters, was 2.062, and 5-year impact factor for the years 2007-2011 was 2.199. In total 77 research papers (plus abstracts from the Corvallis meeting) were published in 2011; 97 papers (plus abstracts from the Rosario meeting) were published in 2012.

The top 5 cited papers published in 2011:

Survival of mouse oocytes after being cooled in a vitrification solution to -196°C at 95° to 70,000°C/min and warmed at 610° to 118,000°C/min: A new paradigm for cryopreservation by vitrification. Mazur, P. , Seki, S.

Cytotoxicity effects of cryoprotectants as single-component and cocktail vitrification solutions. Lawson, A., Ahmad, H., Sambanis, A.

Effect of cryopreservation on fish sperm subpopulations. Beirão, J., Cabrita, E., Pérez-Cerezales, S., Martínez-Páramo, S., Herráez, M.P.

Reduced glutathione content in human sperm is decreased after cryopreservation: Effect of the addition of reduced glutathione to the freezing and thawing extenders. Gadea, J., Molla, M., Selles, E., Marco, M.A., Garcia-Vazquez, F.A., Gardon, J.C.

Characterization of an antifreeze protein from the polar diatom Fragilariopsis cylindrus and its relevance in sea ice. Bayer-Giraldi, M., Weikusat, I., Besir, H., Dieckmann, G.

Events

CRYO2013: Cryobiology Past – Present – Future.

Plans for the 50th Annual Meeting of the Society for Cryobiology, to be held just outside Washington, DC, are advancing apace. The meeting will take place **28-31 July 2013** at the North Bethesda Marriott and Conference Center.

There will be 12 symposia covering virtually all areas of cryobiology, together with additional oral and poster sessions, and commercial exhibitors.

The venue is close to the Washington Metro Red Line with easy access to all places of interest in downtown DC, close to the I-270 Technology Corridor and I-495 (beltway), and the area is served by three airports: Dulles International, Baltimore-Washington International and Reagan-National.

The timetable for registration and submission of abstracts will be announced soon, and the CRYO2013 website will soon be activated with links to hotel reservation at the negotiated meeting rates and the preliminary scientific program. We plan to make this a truly memorable meeting honoring the 50 glorious years of the Society, and we very much look forward to seeing you there.

Eric James

Member's Corner

The Center for Conservation and Research of Endangered Wildlife (CREW) at the Cincinnati Zoo & Botanical Garden in collaboration with the Department of Biological Sciences at the University of Cincinnati is offering a unique opportunity for a qualified, energetic Ph.D. student with a strong interest in plant conservation and molecular biology. The student will be part of a project supported by a Federal grant from the Institute of Museum and Library Services involving the evaluation of samples that have been cryopreserved for up to 24 years in CREW's CryoBioBank.

Candidates for this position should have a B.S. or a M.S., with a strong background in plant genetic analysis and molecular techniques, as well as in statistical analysis. A strong interest in plant conservation is also required. A familiarity with in vitro and/or cryopreservation methods is desirable.

For further information on the project, contact Dr. Theresa Culley, Department of Biological Sciences, University of Cincinnati, 614 Rieveschl Hall, Cincinnati, OH 45221-0006, theresa.culley@uc.edu.; or Dr. Valerie Pence, Center for Conservation and Research of Endangered Wildlife, Cincinnati Zoo & Botanical Garden, 3400 Vine Street, Cincinnati, OH, 45220: valerie.pence@cincinnatizoo.org .

To apply for this position, go online: http://grad.uc.edu/admissions.html. More information on the application process for the UC Biological Sciences program is at: http://www.artsci.uc.edu/collegedepts/biology/grad/application_info.aspx. Review of applications will begin on Jan. 1, 2013, and will continue until a suitable candidate is found.

Do you have any articles of interest, vacancies or opportunities to share? Please send to:
christie.roman@beds.ac.uk

Thinking of publishing your paper in Cryobiology?

- Visit the website (www.societyforcryobiology.org)
- Go to Member's Area and Publications - Details can be found for on-line submission or electronic access to past volumes.

Cryobiology Journal

http://www.sciencedirect.com/science/journal/00112240

Volume 65, Issue 3, Pages 163-372 (December 2012)

- **Establishment of a transport system for mouse epididymal sperm at refrigerated temperatures**
  Toru Takeo, Aki Tsutsumi, Taichi Omaru, Kiyoko Fukumoto, Yukie Haruguchi, Tomoko Kondo, Yuko Nakamuta, Yumi Takeshita, Hiroko Matsunaga, Shuuji Tsuchiyama, Kazuhito Sakoh, Satohiro Nakao, Hidetaka Yoshimoto, Norihiko Shimizu, Naomi Nakagata
- **Effect of common cryoprotectants on critical warming rates and ice formation in aqueous solutions**
  Jesse B. Hopkins, Ryan Badeau, Matthew Warkentin, Robert E. Thorne
- **Effects of cryoprotectant addition and washout methods on the viability of precision-cut liver slices**
  Na Guan, Sylvia A. Blomsma, Paul M. van Midwoud, Gregory M. Fahy, Geny M.M. Groothuis, Inge A.M. de Graaf
- **Outcome of adrenal tissue fragments allotransplantation: The impact of cryopreservation**
  N.M. Alabedalkarim, G.A. Bozhok, E.I. Legach, V.D. Ustichenko, P.M. Zubov, S.B. Bilyavskaya, G.V. Dudetskaya, T.P. Bondarenko, M.W. Hoffmann
- **Microsatellite genotyping of cryopreserved spermatozoa for the improvement of whitefish semen cryobanking**
  Dorota Fopp-Bayat, Andrzej Ciereszko
- **Cryopreservation of sperm of an indigenous endangered fish species Nandus nandus (Hamilton, 1822) for ex-situ conservation**
  M. Rafiqul Islam Sarder, M.F. Monowar Sarker, Shankar K. Saha
- **Differential expression of microRNA species in a freeze tolerant insect, Eurosta solidaginis**
  Lynn A. Courteau, Kenneth B. Storey, Pier Jr. Morin
- **Changes in rat spermatozoa function after cooling, cryopreservation and centrifugation processes**
  Suhee Kim, Cansu Agca, Yuksel Agca
- **Flying-fox (Pteropus spp.) sperm membrane fatty acid composition, its relationship to cold shock injury and implications for cryopreservation success**
  D.F. Melville, S.D. Johnston, R.R. Miller Jr.
- **Cryoprotective and contraceptive properties of egg yolk as an additive in rooster sperm diluents**
  Julián Santiago-Moreno, Cristina Castaño, Adolfo Toledano-Díaz, Miguel A. Coloma, Antonio López-Sebastián, María T. Prieto, Jose L. Campo
- **Suppression of MAPKAPK2 during mammalian hibernation**
  Khalil Abnous, Christopher A. Dieni, Kenneth B. Storey
- **Calorimetric measurement of water transport and intracellular ice formation during freezing in cell suspensions**
  Shoji Mori, Jeunghwan Choi, Ram V. Devireddy, John C. Bischof
- **Cryopreservation of Greenshell™ mussel (Perna canaliculus) trochophore larvae**
  E. Paredes, S.L. Adams, H.R. Tervit, J.F. Smith, L.T. McGowan, S.L. Gale, J.R. Morrish, E. Watts
- **Prevention of hypothermic haloing extends the preservation time of hepatocytes at non freezing temperatures**
  Peter J. Evans
- **Temperature field reconstruction for minimally invasive cryosurgery with application to wireless implantable temperature sensors and/or medical imaging**
  Chandrajit Thaokar, Yoed Rabin
- **Vitrification of in vitro produced bovine embryos: Effect of embryonic block and developmental kinetics**
  V. Asgari, S.M. Hosseini, M. Forouzanfar, M. Hajian, M.H. Nasr-Esfahani

- **Comprehensive treatment of malignant mesothelioma patients after the failure of systemic chemotherapy**
  Jibing Chen, Bing Liang, Yuanying Yuan, Chunyan Liu, Li Li, Haibo Li, Feng Mu, Jiansheng Zuo, Kecheng Xu
- **Development of a modified vitrification strategy suitable for subsequent scale-up for hepatocyte preservation**
  Xianwei Wang, Raquel Magalhães, Yingnan Wu, Feng Wen, Sok Siam Gouk, Paul F. Watson, Hanry Yu, Lilia L. Kuleshova
- **Percutaneous ultrasonography and computed tomography guided pancreatic cryoablation: Feasibility and safety assessment**
  Lizhi Niu, Lihua He, Liang Zhou, Feng Mu, Binghui Wu, Haibo Li, Zhenzhong Yang, Jiansheng Zuo, Kecheng Xu
- **Evaluation of the relevance of the glassy state as stability criterion for freeze-dried bacteria by application of the Arrhenius and WLF model**
  Mathias Aschenbrenner, Ulrich Kulozik, Petra Foerst
- **Effect of the exposure to methyl-β-cyclodextrin prior to chilling or vitrification on the viability of bovine immature oocytes**
  J.F.W. Sprícigo, K.S. Morais, B.S. Yang, M.A.N. Dode
- **Effect of freezing–thawing process and quercetin on human sperm survival and DNA integrity**
  Nassira Zribi, Nozha Feki Chakroun, Fatma Ben Abdallah, Henda Elleuch, Afifa Sellami, Jalel Gargouri, Tarek Rebai, Faiza Fakhfakh, Leila Ammar Keskes

Brief Communications

- **Birth of normal infants after transfer of embryos that were twice vitrified/warmed at cleavage stages: Report of two cases**
  Marcello Valle, Fernando Guimarães, Melissa Cavagnoli, Marcos Sampaio, Selmo Geber
- **Methionine supplementation improves ram sperm parameters during liquid storage at 5 °C**
  Mustafa Numan Bucak, Kenan Çoyan, Caner Öztürk, Şükrü Güngör, Ali Doğan Ömür

Corrigendum

- **Corrigendum to "Simple, inexpensive attainment and measurement of very high cooling and warming rates" [Cryobiology 61 (2010) 231–233]**
  F.W. Kleinhans, Shinsuke Seki, Peter Mazur

Abstracts of papers and posters presented at the 49th Annual Meeting of the Society for Cryobiology held at Rosario, Argentina

Student Awards, 2012. The Society for Cryobiology made the following awards at the meeting: **The Peter L. Steponkus Crystal Award**, won by Ruqayyah Almizraq (abstract #34); **The John K. Critser Travel Award**, won by Anthony J. Reardon (abstract #51); and the **Best Poster Award**, won by Nadia Canorio Pariona (abstract #76).

1. How the natural world helps to understand the past: The Llullaillaco Children's experience
Gabriela Recagno Browning, Mario Bernaski, Gustavo Arias, Leonardo Mercado
2. Roles of intracellular ice formation, vitrification of cell water, and recrystallization of intracellular ice on the survival of mouse embryos and oocytes
Peter Mazur
3. Vitrification and its limitations for preservation
John H. Crowe
4. Are antioxidants a magic bullet for reducing oxidative stress during cryopreservation?
Barbara M. Reed
5. Kinetic vitrification: basic thermodynamical principles, methods and devices
Igor I. Katkov, Vladimir F. Bolyukh, Oleg Chernetsov, Ilya Yakhnenko
6. Characterization of a cold-associated miRNA signature in a freeze tolerant insect
Lynn A. Courteau, Kenneth B. Storey, Pier Jr. Morin

7. An approach to molecular characteristic of collagen mesh extracellular matrix in processed tissue banking, by diffractive techniques
H. Pérez Campos, M. Saldias, G. Sanchez, P. Martucci, M. Acosta, R. Faccio, L. Suescun, M. Romero, A. Mombru
8. Understanding cryoinjuries: Effect of cryopreservation on expression of imprinted genes related to birth defects
A. Baer, E. Szurek, L.C. Layman, A. Eroglu
9. Proteomics analysis
Germán L. Rosano
10. Stem cells for clinical use
Patricia Pranke
11. Vitrification of bovine oocytes and embryos
G. Dalvit, C. Gutnisky, G. Alvarez, P. Cetica
12. From the field to the tank: The cryo-banking of ancient Italian apple germplasm by the dormant-bud technique
Maurizio Lambardi
13. Peripheral blood derived hematopoietic progenitor cells (HPC): An overview of a successful application of cryobiology
Andreas Sputtek, Evgeny Klyuchnikov, Nikolaus Kröger, Sven Peine, Arthur W. Rowe
14. Review of cryopreservation strategy on the post-thaw viability of human embryonic stem cell lines deposited at the UKSCB
R.A. Fleck, C.B. Machado, L. Young, L. Healy
15. Can post-thaw sperm quality affect progeny from European seabass?
R. Leite, S. Martı´nez-Páramo, C. Sarasquete, M. Milan, L. Bargelloni, E. Cabrita
16. Transplantation of cryopreserved testicular germ cells in flatfish species: a useful technique for reproductive biotechnology
T. Pacchiarini, C. Sarasquete, E. Olague, M.P. Herráez, E. Cabrita
17. Vitrification of intact human articular cartilage
Nadr M. Jomha, Janet A.W. Elliott, Garson K. Law, Babak Maghdoori, J. Fraser Forbes, Alireza Abazari, Adetola B. Adesida, Leila Laouar, Xianpei Zhou, Locksley E. McGann
18. Vitrification of zebrafish (Danio rerio) ovarian follicles
Leandro Cesar Godoy, Tiziana Zampolla, Danilo Streit Jr., Adriana Bos-Mikich, Tiantian
19. Cryopreservation and fertility of geoduck (Panopea zelandica) sperm and oocytes
Serean L. Adams, J.F. Smith, H. Robin Tervit, Samantha L. Gale, Lindsay T. McGowan, Jonathon R. Morrish, E. Watts, J. Taylor
20. Rapid removal of glycerol from frozen-thawed red blood cells
Ratih E. Lusianti, James D. Benson, Adam Z. Higgins
21. Cryopreservation of Cleome rosea Vahl in vitro roots using the vitrification technique
L.S. Cordeiro, C. Simões-Gurgel, N. Albarello
22. Long-termed cryopreservation of bone marrow stem cells, peripheral lymphocytes, and umbilical cord cells in liquid nitrogen since 1972: Part-2
S. Sumida, T. Kitamura, N. Motomura, A. Saito
23. Comparison of vitrification-based techniques in the efficacy of cryopreservation of Passiflora suberosa L. and P. foetida L. shoot tips
M.G. Vianna, A.L. Ferreira, R.O. Garcia, E. Falcão, G. Pacheco, E. Mansur
24. Willow seeds viability after imbibition, freezing and freeze-drying treatments
Helena Ott, Patricio R. Santagapita, M. Pilar Buera
25. The influence of desiccation, cryopreservation and rehydration on the survival of polyembryonic Citrus seeds
Natalia Graiver, Alicia Califano, Noemı´ Zaritzky
26. Invariance of the glass transition temperature of plant vitrification solutions with cooling rate
Aline Schneider Teixeira, Miloš Faltus, Jiři´ Zámečnı´k, Renata Kotková, Maria Elena González-Benito, Antonio Diego Molina-Garcı´a
27. Physiological–biochemical characteristics of Pisum sativum seedlings after long-term storage of seeds in the permafrost conditions
I.A. Prokopiev, G.V. Filippova, A.A. Shein, E.S. Khlebnyy
28. Using Synchroton infrared microspectroscopy to better understand the freezing-resistance of lactic acid bacteria
J. Gautier, S. Passot, F. Jamme, S. Cenard, F. Fonseca
29. Seed bank in permafrost soils of North-East of Russia
E.S. Khlebnyy, B.M. Kerschengoltz, P.A. Remigailo, R.V. Jan, I.F. Jimylev
30. Cryopreservation of Daphnia magna genotypes
A. Putman, B. Panis, E. Vanvlasselaer, L. De Meester
31. Ice binding proteins and their dynamic interaction with ice
Ido Braslavsky, Ran Drori, Yeliz Celik, Maya Bar Dolev, Peter L. Davies

32. Particularities of spatial distribution and reproduction of birds in the cold climate (with the bird fauna of Yakutia/northeastern Siberia as an example)
N.I. Germogenov, I.P. Bysykatova, N.N. Egorov, A.N. Sekov, S.M. Sleptsov, M.V. Vladimirtseva
33. Feasibility study on hypothermic machine perfusion of human donor livers using a pressure controlled perfusion system: Initial results on single or dual-flow modalities
A. Jomaa, K. Gurusamy, P. De Muylder, H. Parkes, B. Davidson, B. Fuller
34. The effects of biochemical rejuvenation on red blood cell microvesiculation, phosphatidylserine and CD47 expression during hypothermic storage
Ruqayyah Almizraq, Jayme D.R. Tchir, Jason P. Acker, Jelena L. Holovati
35. Tissue protection mediated by diallyl disulfide in rat liver hypothermic preservation
C.L. Balaban, G. Méjico, J.V. Rodrı´guez, E.E. Guibert
36. Systematic analysis of gene expression changes due to chilling injury in precision-cut liver slices
Na Guan, Sylvia A. Blomsma, Gregory M. Fahy, Geny M.M. Groothuis, Inge A.M. de Graaf
37. Effect of hypothermic preservation on targeted delivery of EGF-Quantum Dots complexes to primary culture of rat hepatocytes
P. Hovanyecz, J.V. Rodrı´guez, E.E. Guibert, J.M. Pellegrino, V. Sigot, Hebe Bottai
38. Impact of microwave processing on dehydration and structural integrity of germinal vesicles from domestic cat oocytes
Gloria D. Elliott, Matt Van Vorst, Jennifer E. Graves-Herring, David E. Wildt, Pierre Comizzoli
39. Freezing effects evaluated on complex biological systems by DSC: Baker's yeast and microalgal cells
Patricio Román Santagapita, Marı´a Florencia Mazzobre, Marı´a del Pilar Buera, Miguel Galvagno
40. Development of stallion sperm cryopreservation extenders by analysis of semen quality and new cryocapacitation markers
Alex Córdova, Pablo Strobel, Omar Ulloa, Javier Urra, Carlos Contreras, Pamela Valenzuela, Alejandra Carrillo, Rafael Burgos, Bruno Menarim, Marcelo Ratto, Enric
Rodríguez-Gil Joan, Ramírez Alfredo
41. Expansion of Ross's gull nesting range in the north of Yakutia in the 20th century
A.G. Degtaryov, K.S. Solomonov, N.G. Solomonov, N.I. Germogenov
42. Age-old changes in ecosystems of Tit–Ary, the polar island in the lower reaches of the Lena river (northeast Asia)
A.P. Isaev, L.G. Mikhalyova, N.G. Solomonov, M.V. Okoneshnikova, V.K. Vasilyeva, A.A. Popov, T.I. Ivanova
43. Global warming and expanding the range of feral conditions in Yakutia – The coldest region of the North-East Asia
N.G. Solomonov, V.F. Chernyavskyy, B.M. Kerschengoltz, O.I. Nikiphorov, E.S. Khlebnyy
44. Mathematical modeling of the heat transfer process in vitrification devices used for oocyte cryopreservation
M.V. Santos, M. Sansinena, J. Chirife, N. Zaritzky
45. Effect of heat transfer coefficient on cooling rates during oocyte vitrification in liquid and slush nitrogen
M. Sansinena, M.V. Santos, N. Zaritzky, J. Chirife
46. Modelling the cryopreservation process: The effect of the cell size distribution
Sarah Fadda, Alberto Cincotti
47. Using the osmotic virial equation to fit hydroxyethyl starch (HES) vapour pressure osmometry data
Jingjiang (Robin) Cheng, Martin Gier, Lisa U. Ross-Rodriguez, Andreas Sputtek, Vinay Prasad, Janet A.W. Elliott
48. Inorganic material, zirconium acetate, displays similar characteristics to antifreeze protein
Ortal Mizrahy, Maya Bar Dolev, Ido Braslavsky
49. Interactions between water and triacylglycerols may explain faster aging rates in stored germplasm at low temperatures
Aline Schneider Teixeira, Daniel Ballesteros, Antonio Diego Molina-Garcia, Christina Walters
50. Relevance of cell biophysical behaviour and membrane fluidity for explaining freezing resistance of lactic acid bacteria
Stéphanie Passot, Marielle Bouix, Julie Gautier, Pascale Lieben, Stéphanie Cenard, Sarrah Ghorbal, Fernanda Fonseca
51. A comparative assessment of mitochondria and membrane cryobiological responses of HUVEC to low temperatures
Anthony J. Reardon, Janet A. W. Elliott, Locksley E. McGann
52. Hypothermic preservation of rat liver microorgans (lmos) in ViaSpan® and BG35 (bes-gluconate-peg35) solutions: Study of ammonia metabolism during rewarming to evaluate their possible use as biological component of a BAL system
F. Berardi, D. Pizarro, A. Scandizzi, M.G. Mediavilla, C. Tiribelli, J.V. Rodrı´guez, M. Mamprin
53. Study of Ferredoxin NADP (H) Oxidoreductase effect in Cos-7 cells injured by hypothermia
M. Pucci Molineris, M. Mamprin, M. Mediavilla
54. Performance of rat liver microorgans (lmos) cold preserved in BG35 solution as the biological component of a new flat-plate model of bioartificial liver (BAL)
D. Pizarro, F. Berardi, A. Scandizzi, M.G. Mediavilla, J.V. Rodrı´quez, M. Mamprin

55. Evaluation of a new solution for hypothermic machine perfusion (HMP) of the liver. I – Composition and physicochemical parameters
Franco Pascucci, Matías E. Carnevale, Cecilia L. Balaban, María E. Mamprin, Edgardo E. Guibert, Joaquin V. Rodríguez
56. Evaluation of a new solution for hypothermic machine perfusion (HMP) of the liver. II – A study in the perfused rat liver in vitro
Matías E. Carnevale, Cecilia L. Balaban, Edgardo E. Guibert, Hebe Bottai, Joaquin V. Rodríguez
57. Characterization and preliminary X-ray crystallographic analysis of an ice-binding protein (FfIBP) from phychrophilic bacteria, Flavobacterium frigoris
Hackwon Do, Jun Hyuck Lee, Eunjung Kim, Sung Gu Lee, Hak Jun Kim
58. Ecological–physiological adaptations of terrestrial vertebrate species to the conditions of sharply continental climate of Yakutia
N.G. Solomonov, E.S. Solomonov, A.I. Anufriev, I.M. Okhlopkov, A.P. Isaev, T.N. Solomonova, V.T. Sedalishchev, N.I. Mordosova
59. Current status of tundra cranes species populations in Yakutia
N.I. Germogenov, I.P. Bysykatova, A.G. Degtyarev, N.G. Solomonov, S.M. Sleptsov, N.N. Egorov, A.E. Pshennikov, M.V. Vladimirtseva
60. Investigation of osmotic tolerance limits for rational design of vitrification procedures
Allyson K. Fry, Adam Z. Higgins
61. Cholesterol depletion affects the biophysical state of oocyte membranes disturbing amphibian fertilization
Jorgelina Buschiazzo, Telma S. Alonso, Ida C. Bonini, Silvia S. Antollini
62. A method for filtering ultra-rapid cooling profiles using orthogonal wavelets
Leonardo Juan de Paz, Ana M. Korol, Joaquin V. Rodríguez, Daniel A. Graf, Edgardo E. Guibert, María T. Marı´n, Osvaldo A. Rosso
63. Quick freezing process in shellfish: Total volatile basic nitrogen and algal biotoxins values in scallops frozen on board in Argentina
Alejandra B. Goya, Débora Bellonio, Rafael Bonavigna, Rodolfo G. Goya
64. Comparative cryopreservation study of trochophore larvae from two species of bivalves: Pacific oyster (Crassostrea gigas) and blue mussel (Mytilus galloprovinciallis)
E. Paredes, J. Bellas, S.L. Adams
65. Development of molecular markers for stage II and stage III zebrafish ovarian follicles after in vitro culture
S. Anil, T. Zampolla, T. Zhang
66. Development of a novel methodology for cryopreservation of melanoma cells applied to the CSF470 therapeutic vaccine
Ivana J. Tapia, Juan Martı´n Arriaga, Mariana Aris, Valeria J. Duzelman, Paula A. Blanco, Florencia Mazzobre, Marı´a del Pilar Buera, Julio Vega, José Mordoh, María Marcela Barrio
67. Motility of Colossoma macropomum cooled semen with different concentration of extenders
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